



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

FEB 23 2000

400 Seventh Street, S.W.
Washington, D.C. 20590

DOT-E 8220
(FOURTH REVISION)

EXPIRATION DATE: January 31, 2002

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Applied Companies
Valencia, CA
2. PURPOSE AND LIMITATIONS:
 - a. This exemption authorizes the manufacture, mark, sale and use of a non-DOT specification cylinder conforming with all regulations applicable to a DOT specification 3HT cylinder, except as specified herein, for the transportation in commerce of the materials authorized by this exemption. This exemption provides no relief from any Hazardous Materials Regulation (HMR) other than as specifically stated herein.
 - b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171- 180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.302(a) in that a non-DOT specification cylinder is not authorized.
5. BASIS: This exemption is based on the application of Applied Companies dated January 1, 2000, submitted in accordance with § 107.109.

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Proper Shipping Name/ Hazardous Material Description	Hazard Class/ Division	Identi- fication Number	Packing Group
Air, compressed	2.2	UN1002	n/a
Nitrogen, compressed	2.2	UN1066	n/a

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packagings prescribed is a non-DOT specification girth welded steel cylinder having a maximum water capacity of 25 cubic inches made in accordance with Applied Equipment Corporation's design specification including Drawing 54080-125-1 Rev. 0 dated September 11, 1974; and a non-DOT specification girth welded steel cylinder having a maximum water capacity of 20 cubic inches made in accordance with Allied Companies Drawing 54080-365-14 Rev. A dated August 30, 1990. Cylinder drawings are on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA) and cylinders are in full compliance with DOT Specification 3HT(178.35 and 178.44), except as follows:

§ 178.35(e) *Pressure relief devices*

(Add) A statement verifying the adequacy of the pressure relief devices for each cylinder must be submitted to the Associate Administrator for Hazardous Materials Safety (AAHMS) prior to initial shipment.

§ 178.44(a) *Type, size and service pressure.*

Cylinder must be girth welded and have one end fitting welded either as shown in:

- (1) Drawing 54080-125-1 Rev. 0 with a maximum water capacity of 25 cubic inches; or
- (2) Drawing 54080-365-14 Rev. A with a maximum water capacity of 20 cubic inches.

Maximum service pressure must be 6,000 psi.

§ 178.44(b) *Authorized steel.*

Austenitic stainless steel (21-6-9) with the following composition and properties is authorized.

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Maximum service pressure must be 6,000 psi.

§ 178.44(b) *Authorized steel.*

Austenitic stainless steel (21-6-9) with the following composition and properties is authorized.

<u>CHEMICAL ANALYSIS</u>	<u>PERCENT</u>
Carbon	0.040 max.
Manganese	8.00/10.00
Phosphorus	0.060 max.
Sulfur	0.030 max.
Silicon	1.00 max.
Chromium	19.00/21.50
Nickel	5.50/7.50
Nitrogen	0.15/0.40

TYPICAL MECHANICAL PROPERTIES

<u>Condition</u>	<u>Ultimate Tensile (PSI)</u>	<u>Yield Strength (PSI)</u>	<u>Elongation Percent In 2 in.</u>
Annealed	112,000	68,000	44
20% Cold- Reduction	150,000	120,000	18

§ 178.44(d) *Manufacture.*

(Add) Each cylinder shall be subjected to a process treatment after welding and before stress relieving by hydrostatically pressurizing to at least 100 percent but not more than 110 percent of the test pressure, and maintained at this pressure for 3 minutes. The process treatment must be witnessed by the independent inspector.

§ 178.44(e) *Welding or Brazing.*

(1) Welding as prescribed in § 178.44(a) of this exemption is authorized.

(2) All pressure welds shall be 100 percent radiographed after hydrostatic test.

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§ 178.44(f) *Wall Thickness.*

(1) Applies except that 120,000 psi replaces 105,000 psi in the last sentence.

(2) and (3) * * *

§ 178.44(g) *Heat Treatment.*

The half cylinders may be stress relieved or annealed for forming. Welded cylinders must be stressed relieved at a temperature of $900^{\circ}\text{F} \pm 25^{\circ}$ for one hour. Stress relieving to be done after process treatment, and before hydrostatic test.

§ 178.44(j) *Cycling Test.*

* * *

(1) * * *

(2) * * *

(3) A lot is defined as a group of cylinders sequentially fabricated conforming to a specific design, from the same heat of steel, manufactured by the same process, and stress relieved under the same conditions of time, temperature and atmosphere and may not exceed 200 cylinders.

(4) * * *

(5) Cycle test on each lot prescribed in paragraph (3) above is not required when the 3 cylinders tested to qualify the design meet the requirements of paragraph § 178.44(p)(4)(i) of this exemption. The results of design qualification testing per paragraphs §§ 178.44(j) and (p)(4) of this exemption must be submitted to the AAHMS prior to initial shipment.

§ 178.44(m) *Physical tests*

Not required.

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§ 178.44(n) *Magnetic particle inspection.*

Not required. Instead each cylinder must be inspected using apparatus and procedures for liquid penetrant examination in accordance with ASTM-E-165-65. Inspection shall be performed externally on the finished container after hydrostatic test. Evidence of discontinuities, which in the opinion of the independent inspector may appreciably weaken or decrease the durability of the cylinder, shall be cause for rejection.

§ 178.44(p) *Acceptable results of tests.*

- (1) Flattening required without cracking to six times the wall thickness of the cylinder.
- (2) Physical tests - not required.
- (3) Burst pressure shall be at least $4/3$ times the test pressure. Failure must be in the sidewall in a longitudinal direction. Actual burst pressure must be recorded.
- (4) Cycling -
 - (i) Design qualification test - At least 50,000 cycles from 0 to service pressure without evidence or distortion or failure.
 - (ii) Lot qualification test - At least 10,000 cycles from zero to service without evidence of distortion or failure.

§ 178.44(q) *Rejected cylinders.*

Repair of welded seams by welding prior to process treatment is authorized; subsequent thereto containers must be heat treated and pass all prescribed tests.

§ 178.44(r) *Marking.*

Applies except that the cylinders must be marked "DOT-E8220" instead of "DOT-3HT" followed by the

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service pressure and stamping elastic expansion is not required.

§ 178.44(s) *Inspectors Report.*

Inspectors report must be appropriately modified to reflect identification and compliance with this exemption.

b. TESTING - Each cylinder must be reinspected and hydrostatically retested every 3 years in accordance with § 173.34(e) as prescribed for DOT-3HT cylinders, except that the rejection elastic expansion criteria does not apply.

8. SPECIAL PROVISIONS:

a. In accordance with the provisions of Paragraph (b) of § 173.22a, persons may use the packaging authorized by this exemption for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this exemption.

b. A person who is not a holder of this exemption, but receives a package covered by this exemption, may reoffer it for transportation provided no modifications or changes are made to the package and it is offered for transportation in conformance with this exemption and the HMR.

c. A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.

d. Each packaging manufactured under the authority of this exemption must be marked with a registration symbol designated by the Office of Hazardous Materials Exemptions and Approvals for a specific manufacturing facility.

e. A current copy of this exemption must be maintained at each facility where the package is manufactured under this exemption. It must be made available to a DOT representative upon request.

f. Cylinders are subject to the use restrictions prescribed in § 173.302(a)(2), except they may also be used in military weapons systems. A copy of the

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inspector's report on the first lot of cylinders produced must be submitted to the OHMEA prior to initial shipment.

g. Cylinders must be shipped in strong outside packagings in conformance with § 173.301(k).

h. A cylinder is not authorized 15 years after the date of manufacture.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo aircraft only.
10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each aircraft used to transport packages covered by this exemption. The shipper shall furnish a copy of this exemption to the air carrier before or at the time the shipment is tendered.
11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
 - o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, Parts 171-180.
 - o Registration required by § 107.601 et seq., when applicable.

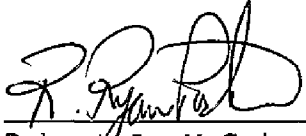
Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (Sections 171.15 and 171.16 apply to any

activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must also inform the AAHMS, in writing, as soon as practicable of any incidents involving the package and shipments made under this exemption.

Issued at Washington, D.C.


For Robert A. McGuire
Acting Associate Administrator for
Hazardous Materials Safety

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(DATE)

Address all inquiries to: Associate Administrator for
Hazardous Materials Safety, Research and Special Programs
Administration, Department of Transportation, Washington, D.C.
20590. Attention: DHM-31.

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prohibited.

Copies of exemptions may be obtained from the AAHMS, U.S.
Department of Transportation, 400 7th Street, S.W.,
Washington, DC 20590-0001, Attention: Records Center, 202-366-
5046.

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